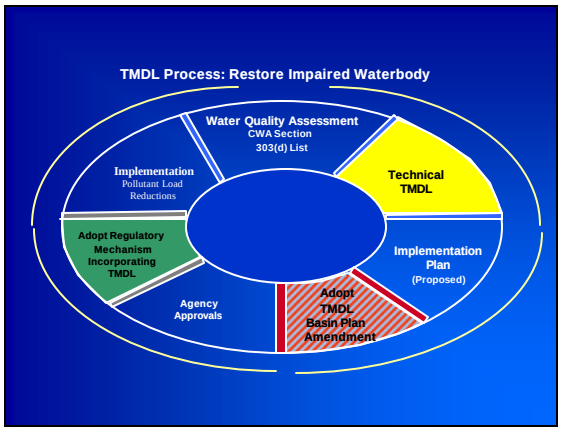


Technical Portion Overview

- Copper Contamination in SIYB
- Source Analysis
- TMDL and Allocations
- Load Reductions

Problem Statement

Dissolved Copper Water Quality Objectives / Numeric Targets

Exposure	Water Quality Objective*	Numeric Target*
Chronic	3.1 µg Cu/L	3.1 µg Cu/L
Acute	4.8 µg Cu/L	4.8 µg Cu/L

* Concentrations should not be exceeded more than once every three years

Copper Studies in SIYB

1991-3 U.S. Navy	Highest copper values in South Bay and enclosed basins; 6.9 µg/L in SIYB
1993-4 Regional Board	Highest copper levels in SIYB reached 12 µg/L
2000 Regional Board	Highest copper levels in SIYB reached 8 µg/L
2000-2 U.S. Navy	Composite samples read as high as 4.5 µg/L

Sediment/Toxicity in SIYB

1991 U. S. Navy	Sediment chemistry: Adverse effects occasionally occur
1996 SWRCB	Sediment chemistry: Adverse effects occasionally occur; observed sediment toxicity
2000 SIO	Sediment chemistry: Adverse effects frequent
2000 Regional Board	Water column chemistry: observed toxicity

Ecological Impacts

- Degraded biological communities
- Bioaccumulation in tissues

Regional Board Survey – Confirmation of Impairment

Station	[Cu] ppb
A	8.0
B	7.7
C	5.0
D	5.9
E	3.5
F	2.6
G	1.5

Copper-Based Antifouling Paints

- Regulated as pesticides by DPR and USEPA
- Discourage marine fouling
- Toxic to non-target organisms

- *Passive leaching*
- *Underwater hull cleaning*

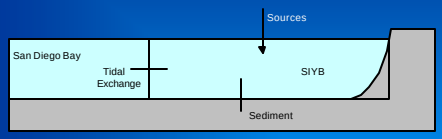
98% Loading into SIYB from Copper-Based Paints

Source Analysis

Passive Leaching.....93%
Underwater Hull Cleaning.....5%
Urban Runoff.....1%
Background.....1%
Direct Atm. Deposition.....<1%
Sediment.....0%

Total 100%

TMDL Calculation

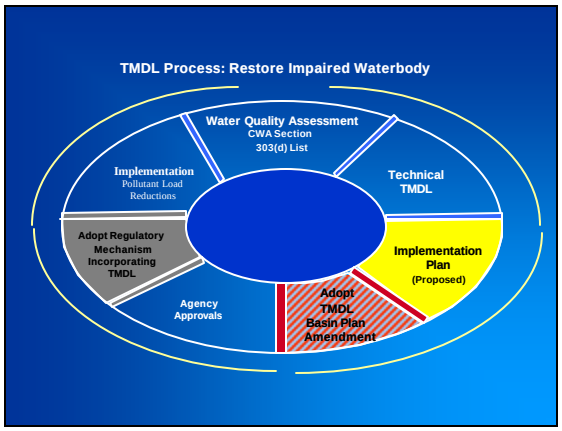


Total Maximum Daily Load = 567 kg/yr

76% Reduction needed to attain TMDL

TMDL and Allocations

Source	Current Load (kg/year)	Allocation (kg/year)	Percent Reduction from Current Loading (%)	Percent Reduction from Total Loading (%)
Passive Leaching	2000	375	81	75
Hull Cleaning	100	72	27	1
Urban Runoff	30	30	0	0
Background	30	30	0	0
Direct Atmospheric Deposition	3	3	0	0
Sediment	0	0	0	0
Margin of Safety		57		
Combined Sources	2163			76
TMDL		567		



Implementation Overview

- Legal Authority
- Responsible Dischargers
- SB 315 Economics report
- Compliance Schedule

Pesticide Regulation

- US Environmental Protection Agency (USEPA)
- Department of Pesticide Regulation (DPR)
- County Agricultural Commissioner
- State and Regional Boards

California Water Code

- Residual copper is a waste
- Violation of a Basin Plan Prohibition
- Waste Discharge Requirements
- Cease and Desist Order
- Cleanup and Abatement Order

Clean Water Act

- Residual copper is a pollutant
- Cumulative point sources
  - Marinas
- Subject to NPDES permit

NPDES Permits for Residual Pesticides

- Ninth Circuit Court
- Statewide General NPDES Aquatic Pesticides Permit
- USEPA Interim Guidance
- State Board's Position

Issue NPDES Permit to Port and Marinas

Regional Board Actions

- Issue NPDES permit to Port and Marinas to mandate compliance with reductions
- Pursue regulatory and legislative solutions
  - USEPA, DPR, CAC
  - State Board

Discharger Actions

- Port and Marinas
  - Meet waste load reductions
  - Compliance monitoring
- Boat Owners and Hull Cleaners
  - Reduce copper discharges
  - Potential ways to reduce copper

SB 315 Economics Report

- Incentives to non-toxic alternatives
- 100% conversion in San Diego Bay
  - 15 years
  - Minimal economic impacts
- Announce ban/set deadline

Compliance Schedule

- Based on Economics report
- 17-year staged compliance schedule
  - 2-year grace period
  - 15-year reduction period
- Allows for development and testing

17-Year Compliance Schedule